THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

CREATE CHANGE

Geometallurgy at the Sustainable Minerals Institute

Julius Kruttschnitt Mineral Research Centre
WH Bryan Mining and Geology Research

Geological understanding is fundamental to the optimal operation of any mine and processing facility. This understanding can shed light on a wide range of key questions including:

- What fundamental geological processes have produced the key variations in physical ore characteristics that will affect comminution and separation?
- How can we improve the way these variations are measured, mapped, and incorporated into mineral processing strategies?
- How can we improve the feedback loop between mine and process performance and predictive orebody models?
- How can we understand, predict and mitigate the effects of deleterious elements and ore characteristics in order to minimise environmental footprints?

The SMI Production centres (the JKMRC and BRC) bring an unparalleled combination of expertise to the facets of this fundamental linkage, including specialists and students in geology, geochemistry, geophysics, metallurgy, mineralogy, mineral processing, data analysis and engineering.

We carry out research covering the full range from site-based collaborative case studies with industry partners to studies aimed at reaching breakthroughs in the fundamental understanding of the geological basis for metallurgical performance

The SMI Production centres have a full suite of facilities for the conduct of geometallurgical research including:

- Access to a comprehensive geometallurigcal testing lab
- A full suite of industry-standard metallurgical characterisation tools, many of which were developed at the JKMRC
- UQ Analytical facilities for measurement of texture, mineralogy and chemistry including MLA, SEM, LA-ICPMS, X-ray microtomography, optical microscopy, as well as a full suite of computational tools

Current and recently completed projects include:

- Geological controls on Arsenic deportment (Industry-funded project)
- Geological prediction of reactive ground (Industry-funded project)
- Ore amenability to HVP processing (Industry-funded project)
- Automated lithological and domain interpretation using high resolution core data (Industry-funded project)
- Geological controls on filtration amenability (current PhD project)
- Hyperspectral data and multielement geochemistry for process prediction (current PhD project)
- Use of Hyperspectral scanning for understanding of ore processing variability (current PhD project)
- Exploring the linkages between texture, mineralogy, alteration and rock strength (current PhD project)
- Measuring While Drilling for rock mass characterization in Comminution (current PhD project)
- Ore fabric/composition linkages to blasting characteristics (current PhD project)
- Texture models for liberation prediction (recently completed PhD project)
- Effect of veins on mineral liberation (recently completed PhD project)
- Development of a correlation between mineralogy, rock strength measures and breakage in Porphyry Copper deposits (recently completed PhD project)
- Investigating textural drivers for separation performance in a variable and complex ore body (recently completed PhD project)
- Improved process development for complex silver ores through systematic advanced mineral characterisation (recently completed PhD project)
- A Novel geometallurgical approach to tailings storage facility characterisation and evaluation (recently completed PhD project)

For enquiries about potential collaborative projects, training, or study opportunities, please contact:

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